

WHAT IS CLAIMED IS:

- 1 1. An inventory label generating method comprising:
2 generating a plurality of candidate labels; and
3 selecting a plurality of acceptably distinguishable labels from among the
4 candidate labels by determining spectra emitted by the candidate labels when the
5 candidate labels are energized, and by comparing the spectra of the candidate labels.
- 1 2. The method of claim 1, wherein the labels comprise semiconductor
2 nanocrystals.
- 1 3. The method of claim 1, wherein the candidate labels are generated
2 by combining a plurality of markers, each marker emitting a marker signal at an
3 associated signal wavelength in response to excitation energy.
- 1 4. The method of claim 1, further comprising directing an excitation
2 energy toward the markers and measuring the wavelength/intensity spectra emitted by the
3 labels.
- 1 5. The method of claim 1, wherein the wavelength/intensity spectra of
2 the candidate labels are determined by modeling a combination of a plurality of marker
3 signals.
- 1 6. The method of claim 5, further comprising calculating at least one
2 of the signals by modeling emissions from a manufacturable marker.
- 1 7. The method of claim 6, further comprising adjusting the calculated
2 signals from the manufacturable marker in response to measured marker signal variations.
- 1 8. The method of claim 5, further comprising measuring at least one
2 of the signals by energizing a marker so that the marker emits the signal.
- 1 9. The method of claim 1, further comprising comparing at least some
2 of the candidate labels with a library of distinguishable labels to determine if the
3 candidate labels are acceptable, and adding acceptable candidate labels to the library.
- 1 10. A method for identifying a plurality of identifiable elements, the
2 method comprising:

3 energizing a plurality of labels so that a first marker of each label
4 generates a first signal with a first wavelength peak, at least some of the labels comprising
5 multiple-signal labels, each multiple-signal label having a second marker generating a
6 second signal with a second wavelength peak;
7 measuring the first wavelength peaks;
8 for each multiple-signal label, measuring the second wavelength peak at at
9 least a predetermined minimum wavelength separation from the associated first peak; and
10 identifying the labels in response to the measured peaks.

1 11. The method of claim 10, wherein each predetermined minimum
2 wavelength separation is at least as large as a full width half maximum (FWHM) of at
3 least one of the associated first peak and the associated second peak.